AMENDMENTS TO THE CLAIMS

The following listing of the claims replaces all previous listings.

1.   (Currently Amended) A method of producing volume renderings from magnetic resonance image data in real time with user interactivity, the method comprising:

collecting magnetic resonance image (MRI) from a magnetic resonance coil, the MRI data representative of shapes within an image volume;

transferring the MRI data to a computer; and

producing a ~~volume~~ three-dimensional rendering of a volume from the MRI data in real time with respect to the act of collecting MRI data from a magnetic resonance coil representative of shapes within the image volume.

2.   (Currently Amended) The method of claim 1 wherein the acts of collecting MRI data, transferring the MRI data to a computer, and producing a three-dimensional ~~volume~~ rendering are performed continuously.

3.   (Currently Amended) The method of claim 2 wherein the act of producing a three-dimensional ~~volume~~ rendering from the MRI data includes rendering a plurality of two-dimensional image slices.

4.   (Currently Amended) The method of claim 3 wherein the act of collecting MRI data from a magnetic resonance coil representative of shapes within the image volume includes executing a two-dimensional pulse sequence using view sharing between even and odd echoes.

5.   (Currently Amended) The method of claim 2 wherein the act of producing a three-dimensional ~~volume~~ rendering from the MRI data includes rendering a three-dimensional rectilinear slab.

6.   (Currently Amended) The method of claim 5 wherein the act of collecting MRI data from a magnetic resonance coil representative of shapes within the image volume includes executing a three-dimensional pulse sequence using view sharing between even and odd echoes.

7.   (Currently Amended) The method of claim 2 wherein the act of producing a three-dimensional ~~volume~~ rendering includes:

> reconstructing image data from the MRI data, the reconstructed image data being
>
>> organized into sets of image slices; and
>
> displaying the reconstructed image data on a monitor to form a three-dimensional ~~volume~~
>
>> rendering.

8.   (Original) The method of claim 7 wherein each image slice is formed from a set of reconstructed image data and the act of displaying the reconstructed image slices includes displaying each reconstructed image slice after all of the set of reconstructed image data is complete.

9.   (Original) The method of claim 7 wherein each image slice is formed from a set of reconstructed image data and the act of displaying the reconstructed image slices includes

displaying at least a portion each reconstructed image slice before the entire set of reconstructed

image data is complete.

10.   (Currently Amended) The method of claim 2 wherein the act of producing a three-

dimensional volume rendering includes:

reconstructing image data from the MRI data, the reconstructed image data being

organized into a rectilinear slab; and

generating a volume rendering from the rectilinear slab of reconstructed image data; and

displaying the three-dimensional volume rendering on a monitor.

11.   (Currently Amended) The method of claim 10 wherein the acts of generating and

displaying the three-dimensional volume rendering are completed after the act of reconstructing

image data is complete for the entire rectilinear slab.

12.   (Currently Amended) The method of claim 10 wherein the acts of generating and

displaying the three-dimensional volume rendering are completed after the act of reconstructing

image data is complete for at least a portion of the rectilinear slab.

13.   (Currently Amended) The method of claim 2 wherein:

the act of producing a three-dimensional rendering a volume from magnetic resonance

imaging data includes the act of displaying the three-dimensional volume

rendering on a monitor; and

the delay (latency) between the act of collecting MRI data and the act of displaying the

three-dimensional volume rendering is equal to or less than about one third of a

second.

14.   (Currently Amended) The method of claim 13 wherein the act of displaying the three-

dimensional volume rendering on a monitor includes displaying the three-dimensional volume

rendering on a monitor at a rate of about 10 or more frames per second.

15.   (Currently Amended) The method of claim 13 wherein the act of displaying the three-

dimensional volume rendering on a monitor includes the act of displaying the three-dimensional

volume rendering on the monitor using alpha blending.

16.   (Currently Amended) The method of claim 13 wherein the act of displaying the three-

dimensional volume rendering on a monitor includes the act of displaying the three-dimensional

volume rendering on the monitor using maximum intensity projections.

17.   (Currently Amended) The method of claim 2 wherein:

the method further comprises determining the position of a cut plane through the three-

dimensional volume rendering; and

the act of producing a three-dimensional volume rendering includes displaying the image

data on only one side of the cut plane.

18.   (Currently Amended) The method of claim 2 wherein:

the act of <u>producing a three-dimensional</u> rendering ~~a volume~~ from the MRI data includes

displaying the <u>three-dimensional</u> volume rendering on a monitor, the displayed

<u>three-dimensional</u> ~~volume~~ rendering having a view; and

the act of collecting MRI data <u>from a magnetic resonance coil</u> representative of shapes

within the image volume includes scanning an image volume so that the MRI data

is organized into image planes orthogonal to the view of the <u>three-dimensional</u>

~~volume~~ rendering displayed on the monitor.

19.   (Currently Amended) An apparatus for producing <u>three-dimensional</u> volume renderings

from magnetic resonance image data in real time, the apparatus comprising:

a magnetic resonance image (MRI) scanner <u>having a magnetic resonance coil</u> configured

to generate MRI data representative of shapes within an image volume; and

a computer in data communication with the MRI scanner, the computer configured to

receive the MRI data from the MRI scanner and to produce a <u>three-dimensional</u>

~~volume~~ rendering <u>of a volume</u> from the MRI data in real time with respect to <u>an</u>

~~the~~ act of collecting the MRI data <u>from the magnetic resonance coil</u>.